Sound & Vibration Measurements –
ME 459/659 Spring 2019

invites ME students and faculty to a unique presentation on practical engineering

Thursday, March 28 2019
8:00-9:15 am JCAIN 206

Vibration Analysis for Turbomachinery

by

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Abstract

Vibration measurements in structures and rotating machinery: major differences. An overview of eddy current sensors and the various plots obtained for vibration analysis. Highlights on various case studies of vibration issues in large size rotating machinery

Presenter Bio

Ed Wilcox is a Consulting Machinery Engineer with the Energy Technology Company (ETC) of Chevron. Prior to this, he worked for Conoco and Lyondell Chemical as a machinery engineer. He has a BSME degree from the University of Missouri-Rolla and an MSME degree from Oklahoma State University. He is a Vibration Institute Category IV Vibration Specialist and a registered Professional Engineer in the State of Oklahoma. Mr. Wilcox has authored multiple papers in the areas of rotordynamics, vibration analysis, and performance testing at both the Texas A&M Turbomachinery and Pump Symposia, along with several magazine articles.

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Luis San Andrés, Class Instructor and Host (lsanandres@tamu.edu)

- API Centrifugal Compressor Oil Seals And Support Systems - Types, Selection, And Field Troubleshooting.
  Wilcox, Ed (Texas A&M University. Turbomachinery Laboratories, 2000)
  Even though dry gas seals for centrifugal compressors are becoming more popular, knowledge and understanding of oil seals and their associated support systems are still very important. Many existing compressors still have ...

- Application of Dynamic pressure-balanced Seals in a Multi-stage Centrifugal Compressor
  Stiles, David T.; Sandberg, Mark R.; Justak, John F.; Wilcox, Ed; Kuzdzal, Mark J.; Rohrs, Charles A.; Miller, Harry F. (Turbomachinery Laboratories, Texas A&M Engineering Experiment Station, 2016)
  Test results for an ASME Power Test Code 10 (PTC) Type 1 test of a 4,500 psia (310 Bara) discharge pressure gas lift centrifugal compressor outfitted with dynamic pressure-balanced seals at the impeller eyes; shaft interstage ...

- Determining The Root Causes Of Subsynchronous Instability Problems In Two Centrifugal Compressors.
  Wilcox, Ed; O'Brien, Dave P. (Texas A&M University. Turbomachinery Laboratories, 2003)
  This paper discusses the rotordynamic instability problems experienced with two separate centrifugal compressors. While the root causes of the instabilities are very different, the analysis methodology of reconciling the ...

- Practical Methods For Field Performance Testing Centrifugal Compressors.
  Wilcox, Ed (Texas A&M University. Turbomachinery Laboratories, 1999)
  Detailed performance analysis of centrifugal compressors in the field essential to evaluate their existing condition. The current performance of a compressor can also be a valuable tool in evaluating its reliability.

- Reliability and Performance Improvements to a Hydrogen Recycle Compressor
  Wilcox, Ed; Norwood, David (Texas A&M University. Turbomachinery Laboratories, 2007)

- Reliability Improvements To A High Speed/High Energy Pump
  Wilcox, Ed (Texas A&M University. Turbomachinery Laboratories, 2007)
  The paper describes the problems encountered and solutions that were implemented to improve the reliability of a high speed/high energy centrifugal pump. Two of these pumps were originally installed in 1984, with a third ...

- Seal Reliability And Performance Improvements In A Large, High Pressure, High Temperature Barrel Pump
  Wilcox, Ed (Texas A&M University. Turbomachinery Laboratories, 2001)
  Modifications to a high-pressure, high-temperature barrel pump to increase seal reliability and throughout are discussed. The pump is in unspared hydrodewaxer (HDW) feed service. The original seal design included nonpressurized ...

- Troubleshooting Turbomachinery Using Startup And Coastdown Vibration Data.
  Wilcox, Ed (Texas A&M University. Turbomachinery Laboratories, 2002)
  Accurate and meaningful condition monitoring is necessary to prevent both severe equipment damage and unnecessary shutdowns. One of the most important aspects of condition monitoring is the evaluation of startup and shutdown ...

- Unexpected Rotordynamic Instability In A "Proven" FCC Wet Gas Compressor.
  Wilcox, Ed (Texas A&M University. Turbomachinery Laboratories, 1999)
  The cause and effects of a large subsynchronous vibration (3.5 mils at 3490 cpm) in an FCC wet gas compressor are examined. The compressor is driven at 7850 rpm by a 6000 hp electric motor, through a speed-increasing ...

- Vibration Analysis for Turbomachinery
  Wilcox, Ed (Turbomachinery Laboratories, Texas A&M Engineering Experiment Station, 2016)
  Turbomachinery requires a higher level of vibration analysis than general purpose machinery. This includes identifying natural frequencies or modes of a system to determine if a potential resonance occurs. The complexity ...

- Vibration Problems and Solutions in Pumps and Turbomachinery
  Wilcox, Ed; Uere, Martin (Turbomachinery Laboratory, Texas A&M Engineering Experiment Station, 2017)